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AI implementation by the government in the sectors ofUrban Development, Health and Education

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Abstract

Standing at the core of the fourth industrial revolution is the Artificial Intelligence (AI) which is becoming an integral part of every single facet of our lives.It cannot be denied that, with the increase in volume of data sources, there will be an unprecedented amount of digital data available with us that can be used for AI-ML based applications. Thus recognizing the transformative potential of Artificial Intelligence (AI), Machine Learning (ML), Big Data Analytics, and related technologies, the government sector in West Bengal aims to modernize its processes and address long-standing administrative challenges.

With many industries aggressively investing in cognitive and AI solutions, global investments are forecast to achieve a compound annual growth rate (CAGR) of 50.1% to reach USD57.6 billion in 2021. The worldwide public cloud services market is projected to grow 21.4% in 2018 to total USD186.4 billion, up from USD153.5 billion in 2017, according to Gartner, Inc. As per IDC forecasts, by 2025, the global data sphere will grow to 163 zettabytes (that is a trillion gigabytes)2 , or ten times the 16.1ZB of data generated in 2016

This Research Paper has dealt with analysis of the current status of AI implementation by the government of India in different walks of life such as Urban Development, Health and Education in India and more specifically in West Bengal, what AI means to citizens of the nation as well as implentor in the government and how as an impartial researcher, one can conclude the future of AI in the immediate future for the different government services in the sectors of Urban Development, Health and Education.

Personal interviews were carried out with the concerned officials of the three departments of Urban Development, Health and Education and sections of stakeholder citizens to understand the degree of acceptance, adoption and implementation of the AI based projects and conclude the research about the future of AI implementation by the state government.

Keywords: Artificial Intelligence (AI); Machine Learning (ML); AI implementation; Government; West Bengal

1. Introduction

The Prime Minister of India once in the AI Action Summit, 2025 in Paris once said “while the positive potential of AI is absolutely amazing, there are many biases that we need to think carefully about.” The CM of West Bengal too in one of her speech culminating Students Week in January, 2025 acknowledged the importance of AI saying, “With changing times, we need to look at subjects like artificial intelligence and data science.” There is also a hub coming up as the Centre of Excellence for AI by the ITC group in Kolkata which will focus at advanced research on artificial intelligence.

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The Government of West Bengal with aims to enhance governance, improve service delivery, and promote transparency has launched some initiatives to upgrade public services using Artificial Intelligence (AI).

In the process, the research has studied certain initiative of the state government of West Bengal.

In December, 2020 the state government took initiative to form the West Bengal AI-ML Technology Promotion Guidelines that empowers the AL-ML industry to develop and enhance service delivery to leverage AI-ML technology for real-time governance. The Government of West Bengal has prepared a guideline for building an ecosystem that promotes and encourages the usage of AI-ML technology for the larger public interest.]

Under the guideline, AI-based pavement modeling software predicts how long a road treatment will last with a high degree of accuracy, and its bridge deterioration predictions are based on a hundred different factors for the Urban Development Department. Similarly, in the Healthcare sector, supporting diagnosis by detecting various variations in patient data, early detection of potential pandemics, AI-based platform mapping diseases to accelerate the discovery and development of breakthrough medicines,

In July, 2025 the State Government of West Bengal has taken initiative for Selection of Firms for Development of AI-Based Solutions.

The West Bengal government planned to develop a dynamic Enterprise AI Model for the Scientific Framework of Valuation Assessment for a scientific and transparent valuation of immovable properties which will analyze location, market trends, and amenities to determine fair prices, reducing ambiguity and the potential for corruption.

The project of AI-Driven Chain Deed Preparation will digitize legacy registration records, using specialized AI and computer vision to reconstruct the complete history of a property's 'chain deed' and generate standardized deeds from simple information, thus saving both time and money.

An "AI-powered Unified Social Registry" will be created to manage over 100 social welfare schemes by using AI to dynamically identify eligible beneficiaries in near real-time, streamline Direct Benefit Transfers (DBT), and detect anomalies to prevent fraud.

An enterprise AI model will be developed to automate file analysis, preserve institutional knowledge, and speed up decision-making which mean quicker services and approvals for the public.

2. Literature review

The Government of India has constituted an Advisory Group on Artificial Intelligence (AI) for India Specific Regulatory AI framework to provide advice on AI regulation and support necessary regulatory insights for AI-based technologies to enable sustainable development.

NITI Aayog has evaluated various sectors that will be impacted by AI and has taken a conscious decision to focus on a select set of sectors where only private sector led initiatives will not lead to achieving desired societal outcomes. In addition to Healthcare and Agriculture, focus sectors include Education (preparing tomorrow's generation to leverage the global AI revolution to India's advantage), Smart Cities and Infrastructure (solving for India's rapidly urbanising population) and Smart Mobility and Transportation.

AgNext, an agritechnology company founded in 2016, developed an AI-based application called TragNext to identify the quality of agricultural produce, including tea leaves with the Tea Research Association where there's a mechanism to store the details of the tea leaf's moisture on the cloud. The Tea Board of India has installed this solution in West Bengal and deployed this at CISTA or Confederation of Indian Small Tea Growers Association - at Jalpaiguri district of West Bengal.

IIT Kharagpur have successfully predicted the distribution of groundwater arsenic and human health risk in the affected areas, using AI algorithms on environmental and geological and human usage parameters. The predictive model framework would prove vital typically for the identification of drinking water sources in arsenic affected areas of West Bengal and forms the baseline knowledge for the Jal Jeevan Mission of the Government of India.

A Centre of Excellence-AI Lab has been set-up at NIC State Centre, Kolkata under the umbrella of CoE AI, NIC-HQ and initiatives are taken to incorporate new technologies and application of Artificial Intelligence/ Machine Learning, BlockChain, IoT and analytics in various important e-Governance projects in the State specially in initiatives related to Faceless / Contactless Learner License and other citizen-friendly services including online LL / DL at all the RTOs of West Bengal using Aadhaar authentication.

IT Department under the government of West Bengal is working in collaboration with the state police to develop an AI-powered system to monitor the movement of vehicles, the availability of seats on specific buses, estimated arrival time of buses, as well as tracking behavior and Commuter feedback

2.1. Hypothesis

- H1: 'Better Understanding Regarding stakeholder Expectations' through 'Artificial Intelligence' positively influencing organized AI initiatives
- H2: 'Efficient Decision Making' through 'Artificial Intelligence' positively influencing organized AI initiative
- H3: 'Quick Problem Solving' through 'Artificial Intelligence' positively influencing organized AI initiative

3. Research Methodology

Inthisresearch,secondaryaswellasprimarydatahave beenusedtoestablishourmodel.Forcollectingprimary data from state sector inWest Bengal,structured questionnairewith5PointLikert Scalehas beenpreparedasasurveytool.We have tried tocover all of the three departments of Urban Development, Health and Education.120 responses fromgovernment decision makers likesecretarial staff, managersetc. werecollectedthroughConvenience Sampling technique. Exploratory Factor Analysis (EFA) and MultipleRegressionAnalysishavebeen executed as per the research requirement. Our survey period was from 2012 to 2022.

Looking into the correlations among the factors we come to the conclusion that Hypothesis 1 andHypothesis 2 have a strong positive correlation (0.642), Hypothesis 2 and Hypothesis 3 too have strong association (0.731) between them.Here as per statistical analysis, the RMSEA value obtained as 0.044 which is <0.08.90% Confidence Interval (CI) = 0.020 and 0.064 which are <0.08, p-value is 0.654 which >0.05 and within acceptable range.Some other measures include Comparative fit index (CFI), the acceptable range for CFI is>=0.95The overall measurement indices such as chi square value, SRMR, RMSEA, CFI etc are within the acceptable range.So, as a conclusion we can say that the data that is collected through the questionnaire gives enough evidence to support the hypotheses that are guessed from prior research studies.

4. Findings

The survey has been taken and concluded selectively in the three most progressive, aware, technology savvy and urban citizen dealing departments in the state sectors of West Bengal where the better understanding and efficient decision making are earning most accolades for AI-driven initiatives. The other closer members are Women, Child Development & Social Welfare department and the Agriculture departments. This is according to some secondary information shared by state. But again, the researcher omitted the Women, Child Development & Social Welfare department and the Agriculture departments because of lesser number of AI-driven projects running there and lack of ICT based service deliveries provided during the said time period of the research.

As per West Bengal state budget information of the last ten years, it is evident that the selected three state sectors namely, Education Department, Urban Development and Municipal Affairs, and Health and Family Welfares are the top departments of the government of West Bengal using AI-driven information.

5. Conclusion

The main objective of this research is to explore influence of the AI-driven projects, study the different influencing factors on those projects, personal interview of stakeholders in the state sector of the government of West Bengal and conceptualise perspectives to understand the degree of acceptance, adoption and implementation of the AI based projects for administration as well as in the service delivery process. The statistical analysis suggests there are certain challenges, stakeholders' impact and opinion on AI-driven projects. Several obtained observations were carefully calculated with statistical tools and considerable findings have been summarised.

The study has been carried out on a certain time period and should be considered as cross-sectional in nature. Further, the primary source of information for this research is personal interview and some researchers may argue, information gathered through that method may often proves to be either biased which could be from interviewer's side or the respondent's side; also personal interviews have time constraints and for that information supplied by respondents in a short period may often remain inaccurate, not fully supported by facts, inadequate due to personal or official reasons of the respondents.

There are issues raised in the thesis which require further attention. Recognizing that this study has no precedence in the state sector of West Bengal, being the first of its kind, it is hoped that it will open new avenues for IT and AI to carry out more studies in this important field.

References

[1] https://www.mea.gov.in/press-releases.htm?dtl/39023/Prime_Minister_cochairs_AI_Action_Summit_in_Paris_February_11_2025

[2] https://anumati.itewb.gov.in/download/West_Bengal_AI-ML_Technology_Promotion_Guidelines-2020.pdf

[3] https://finance.wb.gov.in/writereaddata/2830%E2%80%93F(e-Gov).pdf

[4] https://www.niti.gov.in/sites/default/files/2025-02/Annual-Report-2024-25_English_FINAL_LOW%20RES_0.pdf

[5] https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pdf

[6] https://www.meity.gov.in/static/uploads/2024/03/75-75-India-AI-Journey.pdf

[7] https://informatics.nic.in/files/websites/jan-2024/west-bengal.php

[8] AI enabled applications towards intelligent transportation, Lakshmi Shankar Iyer, Sep 2021; https://www.sciencedirect.com/science/article/pii/S2666691X21000397